

Natural History along the Natchez Trace Parkway



Classroom Lesson:

Spotted Salamanders: Love those Spots!

› Grade Level:

Kindergarten

› Subject Areas:

Science

› Setting:

Classroom

› Duration:

20 minutes

› Skills:

Listening, coloring,
inference,
observation

› MS Objectives:

Science Inquiry: 1 a, d, e
Life Science: 3 a, e

› Vocabulary:

Poison, salamander,
bitter

Summary:

The students will learn that scientists have learned that spotted salamanders protect themselves by having bright spots.



Materials Needed: A blank copy of the Spotted Salamander coloring sheet for each student. Crayons. Photos of spotted salamanders, and other animals provided below.

Option: A loudly colored stuffed animal that is not representative of the actual coloration of the animal it represents: For example, a lime green-pink polka dotted stuffed pony.

Instructional Information

Mississippi Objectives: 1a) Demonstrate an understanding of a simple investigation by asking questions, 1d) Match a simple problem to a technological solution related to the problem, 1e) Use diagrams, written, and oral expression to describe ideas or data.

Life Science: 3a) Group animals and plants by their physical features, 3e) Recognize and compare the differences between living organisms and non-living materials.

Learning Objectives: The students will: 1) Correctly color a picture of a spotted salamander, 2) Learn that bright spots on an animal can mean danger 3) Learn that human-made toys do not always represent reality.

Teacher Set: The students will learn that spotted salamanders live in our neighborhoods (see teacher fact sheet) and along the Natchez Trace

Parkway. They are very pretty but they taste terrible if another animal tries to eat them. Explain to the students that scientists study the salamanders to learn all about their lives. **Option:** The teacher will show the students a loudly colored stuffed animal and explain that it is brightly colored to attract people's interest but bright colors in nature often mean danger.

Teacher Overview: Spotted Salamanders have yellow spots which warn predators that they are poisonous. While not lethally toxic, their poison makes them taste very bitter to an animal that would like to eat them. Salamanders and lizards are basically different because salamanders lay eggs in water and juveniles metamorphose and lizards lay eggs on land and juveniles resemble adults.

Student Instruction: The students will participate in a discussion about warning colors and then correctly color a picture of a spotted salamander. Students will look at pictures of spotted salamanders and learn that their bright spots warn other animals that they are poisonous. They may taste something like a very strong tasting lemon.

Student Task: Discussion - Ask the students:

1. Show students pictures of spotted salamanders
2. Ask the students:

- a. What is this? (if students say lizard, explain to them that it is a salamander and lays eggs in water, and the lizards lay eggs on land)
- b. Has anyone ever seen a spotted salamander? (Explain that they live in Mississippi and there are a lot that live along the Natchez Trace Parkway a special place where animals are protected.)
- c. What do they look like? (Have student use descriptive words)
- d. Do you like the way they look? Why or why not?
- e. Why do you think they have bright yellow spots? (Their bright yellow spots are like a stop sign, and warn animals to STOP I taste terrible!) Ask the students:
- f. Have you ever tasted a lemon? (Explain that these salamanders would taste like a very strong lemon)
- g. How does tasting terrible protect an animal? (It will be spit out, and the predator will not try that food again.)
- h. Can you think of any other animals that are black and yellow? (bees)
- i. What about black and white? (skunks)
3. Show students pictures of brightly colored insects and tan insects. Ask the students which ones they think may be poisonous to eat.
4. Have the students color pictures of the spotted salamander

Option: Comparing toy animal with actual animal: Pig photos provided

Why is this toy pig brightly colored?

- Answers will vary but should cover the fact that many people like brightly colored objects.

Is this the way real pigs are colored?

- As necessary, the teacher will review that in nature, bright colors often mean danger.

Teacher Closure: Tell students that if they see a brightly colored stuffed toy animal it means “Cuddle” but in nature bright markings it often means “keep back!”

Student Assessment: Does student participate appropriately in discussion? Determine if the students chose the correct colors for the salamander. Be aware that some students may have color vision deficits.

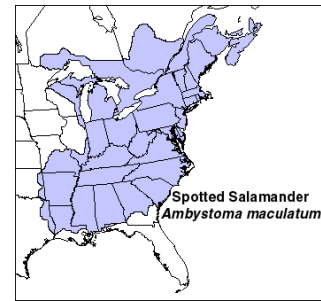
Suggestions for re-teaching: Review the spotted salamander when teaching about other animals.

Teaching extension: The teacher may introduce the students to the concept that the salamanders have trouble crossing the roads. They do not know to look both ways before they cross the street.

Teacher information sheet

Spotted Salamander *Ambystoma maculatum*

Kingdom:	Animalia
Phylum:	Chordata
Class:	Amphibia
Order:	Caudata
Family:	Ambystomatidae - Mole
Salamander	



Description: Spotted Salamanders are black, dark grey or brown with 24 to 45 round yellow or sometimes orange spots. The belly is dark grey. The females may grow up to 10 inches (25cm) long. The males are usually 6 inches (15cm) or less. Glands on their backs and sides produce a mildly toxic nasty tasting liquid if the spotted salamander is grabbed by a predator.

Habitat: They usually live in shallow burrows they have found and only leave them during breeding season or when they cannot find enough food in their burrow. They are territorial and protect their burrows from other spotted salamanders. Each salamander only uses about 9 square yards (9 m² or 29 ft²) of forest floor.

Life History:

Eggs:

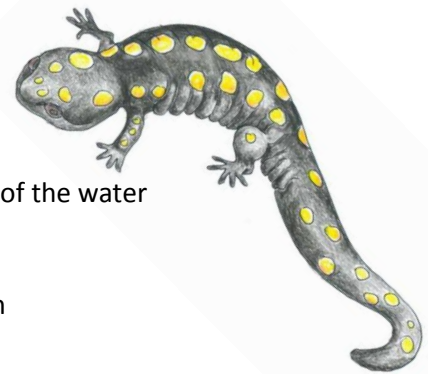
- laid in water in jell-covered groups of 100-300 eggs
- attached to vegetation or debris on bottom of vernal ponds
- take 28 to 49 days to hatch, depending on the temperature of the water

Larval stage:

- has gills and weak front legs when they hatch
- about 12 to 17 mm (1/2" to 2/3" inch) long when they hatch
- are dull olive green
- live in leaf litter on the bottom of vernal pool
- take 60-120 days to metamorphose into small adult (27 to 60 mm)

Adult:

- active only at night
- eats insects, worms, spiders, millipedes
- take two to three years to become an adult (or in the north, up to 7 years)
- may live up to 30 years



Breeding behavior: Vernal ponds are ponds that exist during rainy seasons but disappear during warmer dryer seasons. They lay eggs in vernal ponds because these ponds do not contain fish that would eat the salamanders' eggs. The pond where a salamander lays its eggs is usually the very same one from which it hatched. Salamanders return to the same pond year after year to breed. They will bypass closer ponds to find their home pond.

Their breeding routine starts with spring rains. They migrate en masse from their forest habitat areas to the ponds. They move to the ponds only on rainy nights. The males get to the ponds before the females and do a special "dance", bumping each other and coming up to the surface to gulp air.

Of the approximately 200 eggs laid, only about 40 survive to leave the pool. Of those 40, perhaps only one will survive to adulthood.

Information from: Pajerski, L., G. Hammond and N. Stout. "Ambystoma maculatum" (On-line), Animal Diversity Web. Accessed May 25, 2010 at http://animaldiversity.ummz.umich.edu/site/accounts/information/Ambystoma_maculatum.html.

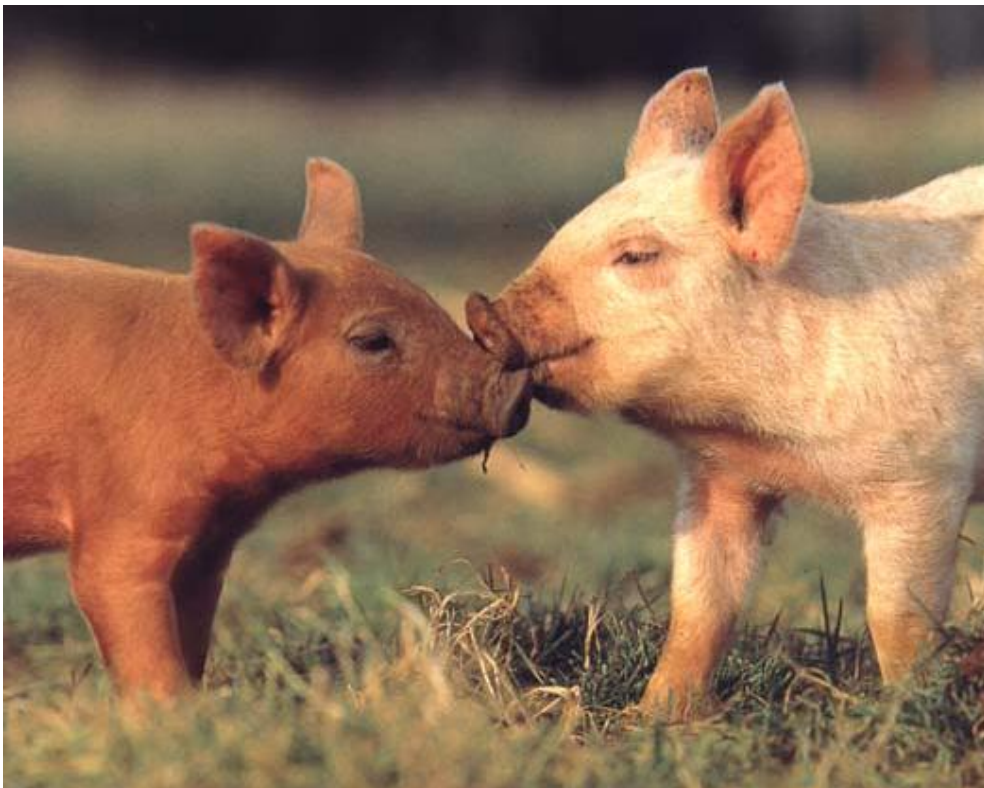




Figure 1 Spotted salamander and eggs



Lizard and eggs



Striped skunk, bright white warning. Photo courtesy of US FWS



Spotted Salamander

